WHAT WE CLAIM IS:

1. A resist mask for measuring alignment, the resist mask comprising at least one alignment mark, wherein the alignment mark includes patterned structures at least some of whose lateral spacing is smaller than the wavelength of light used for alignment measurement.

2. The mask of claim 1, wherein the patterned structures further comprise a plurality of isolated resist features arranged to impart the desired size and shape of the alignment mark.

3. The mask of claim 2, wherein the patterned structures further comprise an array of features.

4. The mask of claim 2, wherein the patterned structures further comprise a stochastic assembly of features

5. The mask of claim 2, wherein the patterned structures appear rectangular in cross-section and top view.

6. The mask of claim 1, wherein the lateral spacing of the patterned structures is less than about half the wavelength of light used for alignment measurement.

7. The mask of claim 1, wherein the at least one alignment mark further includes a continuous resist layer upon which the patterned structures are formed.

8. The mask of claim 7, wherein the patterned structures further comprise an array of features.

9. The mask of claim 7, wherein the patterned structures further comprise an stochastic assembly of features.

10. The mask of claim 8, wherein the patterned structures appear rectangular in cross-section and top view.

11. The mask of claim 7, wherein the lateral spacing of the patterned structures is less than about half the wavelength of light used for alignment measurement.

12. A resist mask for measuring alignment, the resist mask comprising at least one alignment mark, wherein the alignment mark comprises at least two distinct regions, at least one distinct region formed from a plurality of patterned features, at least some of whose lateral spacing is smaller than the wavelength of light used for alignment measurement.

13. The mask of claim 12, wherein each region of the at least two distinct regions includes a characteristic spacing between features, the characteristic spacing differing between regions.

14. The mask of claim 13, wherein the patterned structures further comprise a plurality of isolated resist features arranged to impart the desired size and shape of the at least two distinct regions within the alignment mark.

15. The mask of claim 13, wherein the mark comprises two concentric regions, the outer region comprising a smaller characteristic feature spacing than the inner region.

16. The mask of claim 14, wherein the mark comprises two concentric regions, the outer region comprising a smaller characteristic feature spacing than the inner region.

17. A method for enhanced alignment measurement comprising:

(a) fabricating at least one permanent structure in a substrate, at least one structure comprising a permanent alignment mark;

(b) coating the substrate with resist;

(c) fabricating a resist mask on the substrate, including at least one resist alignment mark, wherein the mark is further divided into an assemblage of features, the spacing of the features being less than the wavelength of light used to measure alignment;

(d) placing the substrate containing the at least one alignment mark in an instrument for measuring the alignment; and

(e) measuring the relative position of the resist alignment mark and the permanent alignment mark.

18. The method of claim 17, wherein the fabrication of the resist mask is performed using optical lithography.

19. The method of claim 17, wherein the fabrication of the resist mask is performed using x-ray lithography.

20. The method of claim 17, wherein the fabrication of the resist mask is performed using electron beam lithography.